REMARKS/ARGUMENTS

In view of the foregoing amendments and the following remarks, the applicant respectfully submits that the pending claims are not rendered obvious under 35 U.S.C. § 103. Accordingly, it is believed that this application is in condition for allowance. **If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicant respectfully requests that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.**

The applicant will now address each of the issues raised in the outstanding Office Action.

Objections

Claims 16, 17, 42 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 16 and 17 depend, indirectly, from claim 12, and claims 42 and 43 depend, indirectly, from claim 38. Since, however, base claims 12 and 38, as amended, are allowable over the cited art for the reasons discussed below, these claims have not been rewritten in independent form at this time.

Rejections under 35 U.S.C. § 103

Claims 1-15, 19-41, 45-50 and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over David Comer, Internetworking with TCP/IP, (2000) Prentice Hall (pub) ("the Comer book") and further in view of Sandick, et al., "Internet-Draft Fast Liveness Protocol," (February 2000) ("the Sandick paper"). The applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Before addressing at least some of the patentable features of various claims, exemplary embodiments consistent with the claimed invention are first introduced. Exemplary embodiments consistent with the claimed invention may be used to provide a "liveness detection mechanism" for quickly detecting a down ***routing*** protocol used by nodes on a network by exchanging messages which include ***aggregated protocol and/or forwarding liveness ("APFL") status information*** with neighboring nodes. (See paragraphs [0012], [0016] and [0086] of the present application.) The APFL status information may contain, for example, the status of the at least two different kinds of routing protocols used by the nodes. The specification describes the ***different kinds of routing protocols*** which can be aggregated and reported on as including:

Bit position	Protocol
0	BGP
1	IS-IS
2	OSPF v2
3	OSPF v3
4	RIP v1/v2

5	RIP NG
6	PIM
7	DVMRP
8	LDP
9	RSVP
10	LMP

(See paragraphs [0012] and [0041] of the present application.) Note that Border Gateway Protocol (BGP) is just one of the many different kinds of routing protocols that may be included in the aggregated message.

This feature provides several advantages. As the specification states:

> hello messages [in conventional liveness detection mechanisms] often carry more than just liveness information, and can therefore be fairly large and require non trivial computational effort to process. Consequently, running fast liveness detection between a pair of neighbor nodes, ***each running multiple protocols***, can be expensive in terms of communications and computational resources required to communicate and process the frequent, lengthy messages for liveness detection. [Emphasis added.]

(Paragraph [0009] of the present application) These conventional liveness detection mechanisms require separate hello messages for each different protocol run on the node. The ability to send ***aggregated protocol status information of multiple protocols*** overcomes the foregoing problem as follows:

> By providing a small number of bits per protocol, which relay a simple set of information (***such as up, down, not reporting, restarting***, etc.), a

> compact, simple message may be used for ***conveying liveness related information***. Since the messages are small ***and can aggregate information from more than one protocol, they can be sent frequently***. [Emphasis added.]

(Paragraph [0086] of the present application) As can be appreciated from the foregoing, the status information of ***at least two different kinds of routing protocols***, and the at least two indicators identifying a different one of the at least two different kinds of routing protocols, can be aggregated into a single message wherein each of the state of the protocols being run may be set, for example, to up, down, not reporting or restarting.

Having introduced some exemplary embodiments consistent with the claimed invention, at least some patentable features of the claimed invention are now discussed.

Independent claims 1 and 27, as amended, are not rendered obvious by the Comer book and the Sandick paper because the cited references, either taken alone or in combination, neither teach, nor make obvious, composing an ***aggregated message including at least two indicators, each indicator identifying a different one of the at least two different kinds of routing protocols and the corresponding status information from each of the at least two different kinds of routing protocols as data within the aggregated message***. In rejecting independent claims 1 and 27, the Examiner contends that the Comer book teaches:

> a) accepting, using the node, status information from at least two different protocols (Comer; 15.10 BGP

> Functionality and Message Types and 15.16 BGP KEEPALIVE Message, discloses determining at a first node status information for ***both BGP and TCP protocols***);
>
> b) composing, using the node, an aggregated message including the status information from the at least two different protocols [...] (Comer; Figure 15.10 BGP Functionality and Message Types and 15.16 BGP KEEPALIVE Message, discloses composing an aggregated keepalive message including the status information); and
>
> c) sending, using the node, the aggregated message towards a neighbor node (Comer; 15.10 BGP Functionality and Message Types and 15.16 BGP KEEPALIVE Message, discloses sending the keepalive message to neighbor second node). [Emphasis added.]

(See Paper No. 20090423, page 3.) Thus, the Examiner contends that the Comer book "discloses determining at a first node status information for both BGP and TCP protocols" and "discloses composing an aggregated keepalive message including the status information." However, the KEEPALIVE message described in the Comer book "consists of a standard message header ***with no additional data***. [Emphasis added.]" (Section 15.16 of the Comer book) Furthermore, a BGP "standard message header" includes only three fields: (1) a MARKER field (which contains a value that both sides agree to use to mark the beginning of a message), (2) a LENGTH field (which specifies the total message length measured in octets), and (3) a TYPE field (which contains a 1-octet field containing the type of message, e.g., a KEEPALIVE message type). (See sections 15.10, 15.11 and 15.16 of the Comer book.) None of the fields include the statuses

of at least two different routing protocols. Although the receipt of a KEEPALIVE message in and of itself may indicate the connectivity of a peer node, in no way does the KEEPALIVE message described in the Comer book include status information from at least two different routing protocols as data within the message.

Furthermore, it appears that since BGP ***uses*** or ***runs on*** the Tranmission Control Protocol (TCP) for transport (i.e., as its transport protocol), the Examiner's position is that a single KEEPALIVE message may indicate the status information of both the BGP ***and TCP*** protocols. However, while BGP is a kind of routing protocol ***TCP is a transport protocol*** used by BGP for transmission. ***TCP is <u>not</u> a routing protocol.*** The differences between routing protocols (such as the ones listed above and TCP are well understood by those skilled in the art.

In order to clarify these differences, independent claims 1 and 27 have been amended to recite that the status information pertains to at least ***two different <u>kinds of routing</u> protocols*** (e.g., at least two different routing protocols from the list of protocols discussed above and included in paragraph [0041] of the present application).

In addition, claims 1 and 27 have been amended to clarify that ***the aggregated message includes (A) two indicators, each indicator identifying a different one of the at least two different kinds of routing protocols and (B) the corresponding status information from each of the at least two different kinds of routing protocols as data within the aggregated message.*** These amendments are supported, for example, by element 424 of Figure 4 and paragraphs [0012] and [0041] of the present application.

Thus, in view of the foregoing amendments and remarks, the Comer book does not teach, or make obvious, composing an aggregated message including at least two indicators, each indicator identifying a different one of the at least two different kinds of routing protocols and the corresponding status information from each of the at least two different kinds of routing protocols as data within the aggregated message.

Furthermore, the purported teachings of the Sandick paper do not compensate for the deficiencies of the Comer book discussed above. Specifically, the Sandick paper includes a "list of neighbor interfaces that the transmitting device has heard from." (Section 4.2 of the Sandick paper.) The described list is "[a] list of all source IP addresses of all FLIP Advertisements that have been heard on this interface". (Section B.1 of the Sandick paper.) ***This list of neighbor interfaces that the transmitting device has heard from does <u>not</u> indicate the <u>status</u> of the at least two different kinds of routing protocols being used by the neighboring nodes.*** Rather, in the Sandick paper, a node receiving a status message from a neighbor node can only ***infer*** that status of its own interface with the neighbor node (and, thus, the status of the protocol being used by that interface). Specifically, the Sandick paper provides:

> When a device receives a FLIP Advertisement from a neighbor, it lists the neighbor interface in its own FLIP advertisements for that interface. If a device receives an advertisement containing its own interface in one of the neighbor fields and it has listed that neighbor in its own advertisement, a FLIP adjacency is established. If an

> advertisement containing the receiving device interface has not been received from a neighbor in FLIPAdvertismentDeadInterval seconds, then that neighbor is removed from subsequent advertisements (for that interface) and the adjacency is considered down.

(Section 4.5 of the Sandick paper.) As can be appreciated from the foregoing, even though a FLIP Advertisement message may include a ***list*** of all source IP addresses of all nodes that the transmitting node has heard from, ***the receiver node can only infer the status of the protocol being used by its interface with the sending node***. That is, the inclusion of source IP addresses in the FLIP Advertisement does not provide the ***status*** of the source nodes. Thus, the Sandick paper neither teaches, nor makes obvious, accepting ***status*** information of at least two different kinds of routing protocols (e.g., ***which indicates whether the at least two protocols are up, down, not responding, or restarting***) and composing an aggregated message including the status information of the at least two different kinds of routing protocols as data within the aggregated message.

Furthermore, the Sandick paper is clearly not concerned with the statuses of ***at least two different kinds of routing protocols***.

Thus, independent claims 1 and 27, as amended, are not rendered obvious by the Comer book and Sandick paper for at least the foregoing reasons.

Independent claims 12, 19, 22, 38 and 45, have been similarly amended and are similarly not rendered obvious by the Comer book and Sandick paper.

Since claims 2-11, 48, 49 and 50 directly or indirectly depend from claim 1, since claims 13-15 and 52 directly or indirectly depend from claim 12, since claims 20 and 21 depend from claim 19, since claims 23-26 directly or indirectly depend from claim 22, since claims 28-37 directly or indirectly depend from claim 27, since claims 39-41 directly or indirectly depend from claim 38, and since claims 46 and 47 directly or indirectly depend from claim 45, these claims are similarly not rendered obvious by the Comer book and Sandick paper.

Claims 18 and 44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Comer book and the Sandick paper, further in view of U.S. Patent No. 5,349,642 ("the Kingdon patent"). The applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Claims 18 and 44 depend from claims 12 and 38, respectively. Since the purported teachings of the Kingdon patent do not compensate for the deficiencies of the Comer book and Sandick paper with respect to claims 12 and 38, as amended (discussed above), these claims are not rendered obvious by the Comber book, the Sandick paper and the Kingdon patent, regardless of the purported teachings of the Kingdon patent, and regardless of the presence or absence of an obvious reason to combine these references as proposed by the Examiner.

Claims 51 and 53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Comer book and the Sandick paper, further in view of U.S. Patent No.

7,362,700 ("the Frick patent"). The applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Claims 51 and 53 depend from claims 1 and 12, respectively. Since the purported teachings of the Frick patent do not compensate for the deficiencies of the Comer book and Sandick paper with respect to claims 1 and 12, as amended (discussed above), these claims are not rendered obvious by the Comer book, the Sandick paper and the Frick patent, regardless of the purported teachings of the Frick patent, and regardless of the presence or absence of an obvious reason to combine these references as proposed by the Examiner.

Claim amendments

In addition to the claim amendments discussed above, claim 49 was amended to correct a typographical error.

New Claims

New claims 54 and 55 depend from independent claims 1 and 12, respectively. These claims are supported by original claims 11 and 15 and paragraph [0041] of the present application.

Conclusion

In view of the foregoing amendments and remarks, the applicant respectfully submits that the pending claims are in condition for allowance. Accordingly, the

applicant requests that the Examiner pass this application to issue.

Any arguments made in this amendment pertain ***only*** to the specific aspects of the invention ***claimed***. Any claim amendments or cancellations, and any arguments, are made ***without prejudice to, or disclaimer of***, the applicant's right to seek patent protection of any unclaimed (e.g., narrower, broader, different) subject matter, such as by way of a continuation or divisional patent application for example.

Since the applicant's remarks, amendments, and/or filings with respect to the Examiner's objections and/or rejections are sufficient to overcome these objections and/or rejections, the applicant's silence as to assertions by the Examiner in the Office Action and/or to certain facts or conclusions that may be implied by objections and/or rejections in the Office Action (such as, for example, whether a reference constitutes prior art, whether references have been properly combined or modified, whether dependent claims are separately patentable, etc.) is not a concession by the applicant that such assertions and/or implications are accurate, and that all requirements for an objection and/or a rejection have been met. Thus, the applicant reserves the right to analyze and dispute any such assertions and implications in the future.

Respectfully submitted,

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